DISSERTATION PROPOSAL

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"Behavioral Responses to Interventions: Essays on Consumer Policy, AI Perception, and Auction Dynamics"

Tuesday, November 18, 2025
10:00am
Tepper 4242

Chapter 1: How Do Tax Policies Impact Health-Relevant Purchasing? Evidence from a Temporary Soda Tax

Soda taxes have been proposed and used as levers to encourage healthy consumption behavior. In this paper we seek to understand *how* soda taxes influence consumers' choices. Does a soda tax merely change the short-term financial incentives consumers face, or can it result in more enduring changes? Moreover, does a soda tax primarily impact healthy consumers, or does it work as a targeted intervention to change the behavior of consumers facing health risks? To answer these questions, we use a unique setting in Cook County, Illinois, where a soda tax was introduced and repealed soon after. Using this natural experiment combined with household-level shopping data, we first observe a reduction in sugar-sweetened beverages during the tax for the average household. However, this decrease was offset by strategic stockpiling before the tax was implemented. We also find purchasing largely reverted to pre-tax levels after the tax was terminated, resulting in no net impact of the tax among the general shopping population. However, examining heterogeneous responses reveals the tax reduced purchasing specifically in diabetic households, including after the tax was repealed. Taken together, the tax was not only impactful in the short run, but also had longer-run effects on a susceptible population.

Chapter 2: Bias in Generative AI: Amplified Stereotypes and Their Impact on Decision-Making

This study examines bias in generative AI through an analysis of approximately 8,000 occupational portraits created by Midjourney, Stable Diffusion, and DALL·E 2. The researchers document significant underrepresentation of women and Black individuals compared to real-world benchmarks. The research identifies two primary manifestations of bias: systematic gender and racial disparities in representation, and subtle biases in facial expressions and appearances that influence perceptions of competence and trustworthiness. Through experimental studies, the authors test whether AI disclosure labels—as proposed in the AI Disclosure Act of 2023—can mitigate the impact of these biases on human decision-making. The findings suggest that such transparency measure effectively reduces the influence of biased AI outputs, particularly when users have familiarity with the occupation in question. Additionally, the study demonstrates that AI disclosure moderates the effect of facial expressions on perceived trustworthiness, suggesting that transparency can help mitigate subtler forms of bias perpetuation. These findings provide empirical support for disclosure-based regulatory approaches as practical solutions to mitigate harmful effects of bias in generative AI.

Chapter 3: Limiting the Field: How Final-Round Competition Restriction Affects Auction Outcomes

This paper examines the revenue and efficiency implications of restricting final-stage competition in sequential auctions. I compare a novel auction mechanism, where initial open bidding is followed by a final stage restricted to the top two bidders, with a standard ascending auction where all participants can bid throughout. While conventional auction theory emphasizes the revenue benefits of competition, the effects of stage-specific participation restrictions remain theoretically ambiguous. Excluding lower-valued bidders

from final competition may reduce competitive pressure. However, the two-finalist structure may intensify competition between committed high-value bidders and potentially reduce the winner's curse, both effects that could increase revenue.

Proposed Committee: Tim Derdenger (Chair), Kannan Srinivasan, Minkyung Kim, Robert Miller, Anh Nguyen (Outside Reader)